

Applicant: Lee et al.
Application No.: 10/603,033

REMARKS

Claims 1-9 are currently pending in this application. Claim 1 has been amended to recite that two piston pin holes are formed on the outer circumferential surface of the piston's slant groove body separate from the at least two slant grooves. This amendment is supported by originally filed Figure 1 which shows pin holes in the piston that are in an ungrooved portion of the piston.

New claim 6 recites that a piston disposed in the tube and configured for displacement along the axial axis. Claim 6 also recites that the piston has a bore extending therethrough that is aligned with the axial axis of the actuator. Claim 6 also recites that the bore is defined by a smooth inner surface. These amendments are supported by originally filed Figure 5A. Claim 6 recites that the piston includes a spline extending radially outwardly therefrom that is formed by a plurality of grooves and a plurality of non-grooved portions. Claim 6 also recites that at least some of the non-grooved portions of the spline define a passageway extending radially inwardly through a side of the piston. Claim 6 further recites that a first set of pins extend radially through the tube to engage the grooves in the spline of the piston. These amendments are supported by originally filed Figure 1.

New claim 7 recites that the second set of pins are positioned in the piston so that the second set of pins is flush with the non-grooved portions of the spline. This amendment is supported by originally filed Figure 5A.

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New claims 8 and 9 recite that the second spline has a second plurality of grooves that extend about the axial axis in an opposite direction from the plurality of grooves in the piston. This amendment is supported by originally filed specification, page 5, lines 17-19.

The abstract has been replaced as required by the examiner.

No new matter has been added to the application by this Amendment.

ABSTRACT

The abstract has been replaced with a single paragraph of less than 150 words as required by the Examiner. Applicants respectfully request that the Examiner reconsider and withdraw the objection to the Abstract.

CLAIM OBJECTIONS

The Examiner objected to claim 1. In response, Applicants have amended claim 1 as suggested by the Examiner. Applicants respectfully request that the Examiner reconsider and withdraw the objections to claim 1.

CLAIM REJECTION - 35 U.S.C. § 103

Claims 1-5 have been rejected under 35 U.S.C. § 103 as being obvious over U.S. Patent 5,671,652 (the '652 patent) in view of U.S. Patent 6,474,214 (the '214 patent). Applicants traverse this rejection as applied to the amended claims.

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To establish a prima facie case of obviousness, "the prior art reference (or references when combined) must teach or suggest all the claim limitations" (MPEP § 2142).

Claim 1 recites, *inter alia*, "two piston pin holes are formed at one side of the slant groove body in a non grooved portion thereof, the piston having a smooth bore extending therethrough."

The '652 patent requires that the annular piston sleeve have splines on an inner and outer surface thereof. Accordingly, the '652 patent fails to disclose, teach or suggest Applicants' element of a piston having a smooth bore extending therethrough. Additionally, the '652 patent only discloses spline to spline connections in the actuator. There is no disclosure, teaching, or suggestion of a pin to slant groove (spline) connection in the '652 patent. Further more there is no disclosure teaching or suggestion of the piston pin holes being located in the ungrooved portions of the piston.

The '214 patent fails to remedy the defects of the '652 patent. The '214 main piston 15 is not connected to an inner rod via a pin to spline connection. Referring to Figure 2 of the '214 patent, the main piston 15 is connected to the output shaft via a solid pin 23 that forces the pin 23 and the main piston to rotate together. As the '214 patent fails to disclose pins in the main piston 15, it by necessity fails to disclose pins located in holes positioned in non grooved portions of the piston.

Neither the '214 patent nor the '652 patent disclose, teach or suggest Applicants' claimed pin to slant groove connection between the piston and the slant groove body.

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Contrary to the Examiner's assertion, the '214 patent teaches away from Applicants' claimed pin to slant groove connection because it discloses the use of a single bar that traverses the entire output shaft 16.

Neither the '214 patent nor the '652 patent disclose, teach or suggest Applicants' claimed piston pin holes located in non grooved portions of the piston.

Neither the '214 patent nor the '652 patent disclose Applicants piston with a smooth central bore with pins extending therethrough to contact splines in an axle rod. The smooth bore reduces machining costs by streamlining the manufacturing of the piston component.

In view of the above noted elements that are not disclosed, taught, or suggested by the '214 patent nor the '652 patent, Applicant respectfully submits that claim 1 is now patentable. Claims 2-5 each depend from claim 1 and are also patentable.

Applicants respectfully request that the Examiner reconsider and withdraw the Section 103 rejection.

NEW CLAIMS

Applicants respectfully submit that new claim 6 is patentable over the outstanding rejections for each of the reasons recited above in connection with claim 1. Claims 7-9 depend from claim 1 and are also patentable.

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CONCLUSION

In view of the foregoing Amendment and Remarks, Applicants respectfully submit that the present application, including claims 1-9, is in condition for allowance and a notice to that effect is respectfully solicited.

Respectfully submitted,

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